

WHAT IS CLAIMED IS:

1. A film comprising at least one layer of silica containing fluorine.
- 5 2. The film according to Claim 1, wherein a concentration of the fluorine in the layer or layers of silica is not less than 0.1 mol% nor more than 10 mol%.
- 10 3. The film according to Claim 2, wherein said concentration of the fluorine is not less than 1 mol%.
- 15 4. The film according to Claim 1, wherein a refractive index of the layer or layers of silica for F_2 laser light is 1.60 to 1.80.
5. The film according to Claim 1, comprising a layer a material of which is selected from the group consisting of MgF_2 , LiF , and Na_3AlF_6 .
- 20 6. An optical element wherein the film as set forth in any one of Claims 1 to 5 is added on a surface thereof.
7. The optical element according to Claim 6, wherein said element is comprised of fluorite.
- 25 8. The optical element according to Claim 5,

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9. The optical element according to Claim 6,
5 wherein said film is an antireflection coating.

10. An optical apparatus for vacuum ultraviolet lithography, comprising the optical element as set forth in Claim 6.

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11. An optical apparatus for vacuum ultraviolet lithography, comprising the optical element as set forth in any one of Claims, 7 to 9.

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12. A device fabrication method comprising a step of exposing a wafer in a device pattern by the optical apparatus as set forth in Claim 10, and a step of developing the wafer thus exposed.

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13. A device fabrication method comprising a step of exposing a wafer in a device pattern by the optical apparatus as set forth in Claim 11, and a step of developing the wafer thus exposed.

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